

1.1 Variables in Algebra

Variable: a letter that is used to represent one or more numbers



The image shows the handwritten equation $y = 5$. A yellow arrow originates from the word 'Variable' in the definition above and points to the letter 'y'. Another yellow arrow originates from the word 'Values' in the definition below and points to the number '5'.

Values: the numbers represented by the variables

Variable Expression: collection of numbers, variables, and operations

VARIABLE EXPRESSION**MEANING****OPERATION**

$8y \quad 8 \cdot y \quad 8(y)$

8 times y

Multiplication

$\frac{16}{b} \quad 16 \div b$

16 divided by b

Division

$4 + s$

4 plus s

Addition

$9 - x$

9 minus x

Subtraction

Evaluating the Expression

Replacing each variable in an expression by a number

For the following examples, evaluate the expression
when $y = 5$

Ex 1: $8y$

$$8 \cdot 5 = 40$$

Ex 2: $10/y$

$$\frac{10}{5} = 2$$

Ex 3: $y + 3$

$$5 + 3 = 8$$

Ex 4: $14 - y$

$$14 - 5 = 9$$

Example:

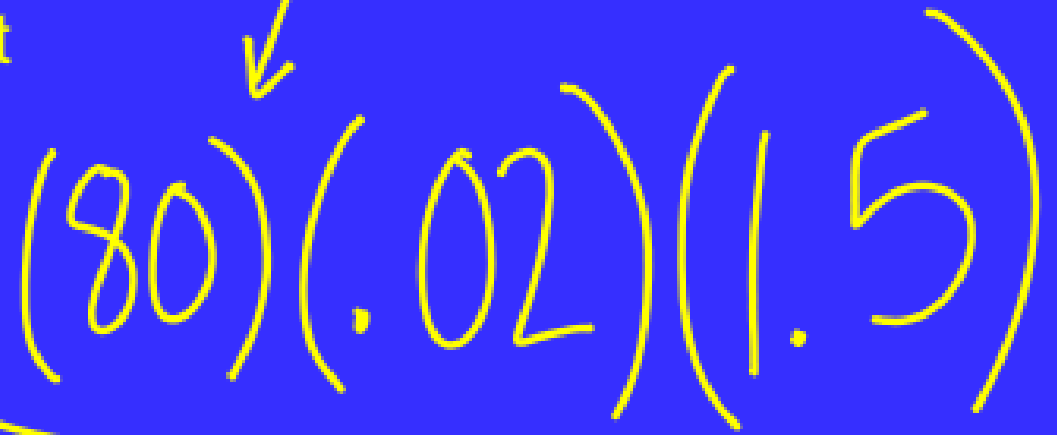
You invest \$80 at a simple annual interest rate of 2%.
How much simple interest would you earn in 1.5 years?

Simple Interest = Prt

P = principal amount

r = rate

t = time



A handwritten calculation of the simple interest formula. The expression $(80)(.02)(1.5)$ is written in blue ink. A blue arrow points from the 'P' in the formula above to the '80' in the calculation.



The result of the calculation, \$2.40, is written in blue ink and enclosed in a hand-drawn blue rectangular box.

Unit Analysis: writing the units of each variable in a real-life problem helps you determine the units for the answer

*Note: When the same units occur in the numerator and denominator of an expression, you can cancel the units.

Find the average speed for the given distance and time

*Note: Average Speed = Distance divided by Time

1. In 5 seconds an athlete runs 40 ft.

$$40 \div 5 = 8 \text{ ft/s}$$

2. A horse gallops 4 kilometers in 30 minutes

$$\frac{4 \div 2}{30 \div 2} = \frac{2 \text{ km}}{15 \text{ min}}$$

Homework: pgs. 6-7 #19-30, 33-35, 40